



charge in cfs			Manganese Concentration Coefficients				
	Intercept	coefficient		B	Intercept		
			Low Flow November-March				
M34	-2.771	0.394	-2.28954	<u>0.38718</u>	A72	0.004	110.08249
CC48	1.752	0.130	6.77165	<u>0.10539</u>	M34	0.039	120.28045
A68	-11.131	0.498	-3.62869	<u>0.45153</u>	CC48	0.024	636.59640
					A68	0.025	37.87432

Discharge Relationships among the three gages

MONTH	J	F	M	A	M	J	J
Intercept	1	1	1	1	1	1	1
A 72	64	63	77	155	682	1196	624
M34	22	22	28	58	266	468	243
CC48	14	13	15	22	91	158	83
A68	25	25	31	66	329	585	300
Ground water	3	3	3	9	-3	-14	-2

1/(1+BQ) Discharge Representation

A 72	0.7962	0.7987	0.7645	0.6173	0.2682	0.1729	0.2860
M34	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519	0.0955
CC48	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
A68	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178

Date variables

sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
Consent	1	1	1	1	1	1	1

A72	Intercept	1	1	1	1	1	1
	BQ	0.7962	0.7987	0.7645	0.6173	0.2682	0.1729
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent						

A72 Concentration **1101** **1293** **1423** **1280** **691** **328** **295**

M34	Intercept	1	1	1	1	1	1
	BQ	0.5327	0.5371	0.4823	0.3056	0.0880	0.0519
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

M34 Concentration **510** **536** **508** **369** **177** **105** **115**

CC 48	Intercept	1	1	1	1	1	1	1
	BQ	0.7551	0.7565	0.7368	0.6548	0.3148	0.2090	0.3339
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
CC 48 Concentratrion		1831	1810	1877	1802	933	451	534

A68	Intercept	1	1	1	1	1	1	1
	BQ	0.6128	0.6171	0.5623	0.3771	0.1085	0.0640	0.1178
	sin	0.1552	0.6358	0.9276	0.9887	0.7862	0.3629	-0.1441
	cos	0.9879	0.7719	0.3737	-0.1496	-0.6180	-0.9318	-0.9896
	sin1	0.3066	0.9815	0.6932	-0.2959	-0.9717	-0.6763	0.2852
	cos1	0.9518	0.1916	-0.7207	-0.9552	-0.2361	0.7366	0.9585
	Consent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
A68 Concentration		1895	2270	2435	2069	1216	731	549

Concentration in Groundwater	0	0	0	0	0	0	0
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Load in pounds per day							
Sum	454	499	636	1068	2869	2957	1279
A72	380	440	592	1071	2544	2120	994
% Difference	0.19	0.13	0.07	0.00	0.13	0.40	0.29
RPD	0.18	0.13	0.07	0.00	0.12	0.33	0.25

ganese Concentration Coefficients

BQ	sin	cos	sin1	cos1	Consent
1300.01851	258.05023	32.88141	-22.83880	<u>-115.51468</u>	0.000
676.85542	28.85039	45.76225	2.36955	<u>-21.93733</u>	0
2418.14462	55.02265	133.79117	-163.86850	<u>-115.75164</u>	<u>-611.58877</u>
2357.47898	524.74014	10.67654	-7.02235	<u>-157.22271</u>	<u>472.32632</u>

A	S	O	N	D
1	1	1	1	1
268	187	142	92	70
103	71	53	33	25
37	26	20	16	14
122	82	60	38	28
6	8	9	4	3

0.4826	0.5721	0.6378	0.7310	0.7813
0.1997	0.2657	0.3255	0.4348	0.5082
0.5317	0.6145	0.6727	0.7167	0.7465
0.2464	0.3278	0.4016	0.5134	0.5884

-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447

1	1	1	1	1
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1	1	1	1	1
0.4826	0.5721	0.6378	0.7310	0.7813
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447

503	673	806	927	993
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1	1	1	1	1
0.1997	0.2657	0.3255	0.4348	0.5082
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000

199	275	339	423	479
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1	1	1	1	1
0.5317	0.6145	0.6727	0.7167	0.7465
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
987	1391	1779	1984	1959

1	1	1	1	1
0.2464	0.3278	0.4016	0.5134	0.5884
-0.6271	-0.9360	-0.9878	-0.7716	-0.3573
-0.7789	-0.3521	0.1556	0.6361	0.9340
0.9769	0.6591	-0.3074	-0.9816	-0.6674
0.2135	-0.7521	-0.9516	-0.1908	0.7447
1.0000	1.0000	1.0000	1.0000	1.0000
713	902	1092	1359	1607

0	0	0	0	0
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777	701	644	531	457
728	679	618	460	376
0.07	0.03	0.04	0.15	0.22
0.07	0.03	0.04	0.14	0.19

A72

Chronic TVS at A72
a2 b2

Cd	-3.49	0.7852
Cu	-1.7428	0.8545
Mn	5.8743	0.3331
Zn	0.8669	0.8473

Prediction Equation Coefficients
Hardness Aluminum Cadmium

B	0.006	1.000	0.006
Intercept	82.304	-26.540	1.020
BQ	200.676	5610.562	1.466
sin	16.936	158.116	0.599
cos	48.860	40.749	0.066
sin1	15.385	127.998	-0.265
cos1	-5.633	6.691	-0.292
Consent			

Month	J	F	M	A	M	J	J
Q	64	63	77	155	682	1196	624
Hardness	277	290	268	196	91	53	72
Al ch	87	87	87	87	87	87	87
Cd ch	2.5	2.6	2.5	1.9	1.1	0.7	0.9
Cu ch	11	11	10	8	4	3	3
Mn ch	2317	2352	2290	2064	1598	1333	1482
Zn ch	279	290	271	208	109	68	90

M 34

Prediction equation coefficients

Hardness Aluminum Cadmium Copper Iron Zinc

B	0.013	1.00	0.021	0.123	0.06521	0.021
Intercept	60.05228	15.10361	0.91724	14.65129	77.70523	05.25873
BQ	205.02801	38.29032	0.60966	00.98354	70.29706	78.11589
sin	9.24827	69.03843	0.26911	14.16661	-89.38888	88.77920
cos	32.30173	79.08681	0.20991	10.17487	38.04002	85.94018
sin1		435.43127	-0.12214	1.04278	86.24646	-17.99615
cos1		123.10453	-0.14689	-3.82920	-12.30367	-45.60154
consent		-265.10754		-10.75402	35.80515	-98.00378

MONTH	J	F	M	A	M	J	J
Avg monthly Q	22	22	28	58	266	468	243
Hardness	255	241	226	170	86	60	76
Chronic Stan Al, ch	87	87	87	87	87	87	87
Cd, ch	2.4	2.3	2.1	1.7	1.0	0.8	0.9
Cu ch	20	19	18	14	8	6	7

Mn	2253	2212	2163	1969	1571	1389	1504
Zn ch	260	248	235	185	104	76	93

A68 Animas at Silverton

Prediction equation coefficients

Hardness Cadmium Copper Manganese Zinc

B	0.011	na	na	0.010	0.016
Intercept	37.945	2.395	5.783	258.473	304.617
BQ	165.600			1371.923	644.136
sin		1.712	2.049	611.024	315.451
cos		0.140	0.729	81.662	-18.603
sin1		-0.250	-1.520	16.031	-33.783
cos1		-1.185	-0.472	-263.628	-140.108
May		-1.936	2.261	-258.699	
consent		-0.714	-1.828	411.428	-67.174

Animas R	Month	J	F	M	A	M	J	J
		Q	25	25	31	66	329	585
	Hardness	168	168	161	134	74	60	76
	Cd,tvs	1.7	1.7	1.7	1.4	0.9	0.8	0.9
	Cu tvs	14	14	13	11	7	6	7
	Mn tvs	1959	1961	1934	1818	1491	1393	1509
onic stand	Zn tvs	182	183	177	151	91	77	94

ction Equation Coefficients

Copper	Iron	Zinc
0.100	0.048	0.014
11.592	325.430	272.266
-11.516	6156.248	697.432
5.618	310.323	155.229
5.955	262.025	37.490
1.700	-72.066	-37.359
-0.594	-177.065	-77.421
-1.491		

A	S	O	N	D
268	187	142	92	70
124	158	182	215	248
87	87	87	87	87
1.3	1.6	1.8	2.1	2.3
5	7	7	9	10
1772	1920	2013	2129	2233
141	173	195	225	255

Acute TVS at M34 Chronic TVS at M34

	a2	b2	a3	b3
Cd	-3.828	1.128	-3.49	0.7852
Cu	-0.7703	0.9422	-1.7428	0.8545
Mn	4.4995	0.7893	5.8743	0.3331
Zn	0.8904	0.8473	0.8669	0.8473

A	S	O	N	D
103	71	53	33	25
126	151	192	217	253
87	87	87	87	87
1.4	1.6	1.9	2.1	2.3
11	13	16	17	20

1783	1892	2050	2136	2246
144	167	205	227	258

Chronic TVS at A68

a2 b2

Cd	-3.49	0.7852
Cu	-1.7428	0.8545
Mn	5.8743	0.3331
Zn	0.8669	0.8473

A	S	O	N	D
122	82	60	38	28
109	125	138	155	165
1.2	1.4	1.5	1.6	1.7
10	11	12	13	14
1695	1777	1836	1908	1947
126	142	155	171	180